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F04B 47/02



# [12] 实用新型专利说明书

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[21]申请号 95220001.5

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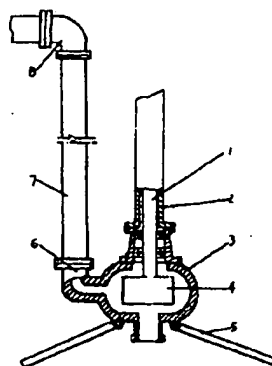
权利要求书 1 页 说明书 2 页 附图页数 1 页

[54]实用新型名称 软轴深井水泵

*Deep Well Water Pump*

[57]摘要

一种软轴深井水泵，它包括有吊管、软轴、水泵体和输水软管，其特征是：水泵体下有使之在井壁上定位的可收放的支撑架，水泵体的出水口远离叶轮，在叶轮最大直径之外的位置上，出水口接输水软管，输水软管在井口转弯处有一个其壳体固定在井口位置上的可减少管内水流冲击的弯头，吊管是一根加长的耐磨软轴套管。该结构的泵使软轴在吊管内旋转的游振减低，使用寿命长，安装和拔出方便，工作安全可靠。



(BJ)第 1452 号

## 权 利 要 求 书

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1、一种软轴深井水泵，它包括有吊管、软轴、水泵体和输水软管，其特征是：水泵体下有使之在井壁上定位的可收放的支撑架，水泵体的出水口远离叶轮，在叶轮最大直径之外的位置上，出水口接输水软管，输水软管在井口转弯处有一个其壳体固定在井口位置上的可减少管内水流冲击的弯头，吊管是一根加长的耐磨软轴套管。

# 说 明 书

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## 软轴深井水泵

本实用新型涉及一种改进的软轴深井水泵。

中国专利号为92202978.4的《软轴潜水离心式农用清水泵》公开了一种水泵，其特征是在水泵吊管内有一软轴，下端与水泵叶轮传动轴相连，上端与动力相连，水泵直接潜入水中，出水管口朝井口方向，由一根输水软管连接，该泵虽解决了低水位地区及无电地区的农田灌溉问题，但因水泵直接吊挂潜入水中，软轴在吊管内旋转，产生剧烈游振，由于出水管口一部分在泵的叶轮上方，出水管中水的冲击对叶轮影响大，叶轮的抖动使软轴在吊管内旋转，产生的游振更剧烈，易磨损吊管，甚至会磨断吊管，把水泵掉入井里，造成很大的经济损失。

本实用新型的任务是提供一种减少软轴在吊管内旋转产生剧烈游振，使用寿命长的软轴深井水泵。

本实用新型的任务是以如下方式完成的：这种软轴深井水泵包括有吊管、软轴、水泵体和输水软管，其特征是：水泵体下有使之在井壁上定位的可收放的支撑架，水泵体的出水口远离叶轮在叶轮最大直径之外的位置上，出水口接输水软管，输水软管在井口转弯处有一个其壳体固定在井口位置上的可减少管内水流冲击的弯头，吊管是一根加长的耐磨软轴套管。

本实用新型不单靠吊挂水泵体定位，由于有支撑架作用，减少水泵体的振动，另外水泵体的出口远离叶轮，输水软管上方井口处弯头的作用，减少了输水时水的冲击力对叶轮的不良作用，减弱因

水的冲击引起的叶轮振动，而使软轴在吊管内旋转的游振减低，使其使用寿命延长，并且安装和拔出简单方便。吊管采用一根特制的加长耐磨软轴套管，耐磨性好，摩擦力小，可有效地保护软轴，进而还具有节能作用，这种吊管中间无接口，防止水入管内冲刷润滑油，减少水泵体内轴承的磨损，使该泵工作安全可靠。

本实用新型的具体结构由以下实施例及其附图给出。

图1是本实用新型给出的软轴深井水泵的纵向剖面示意图，

在图1中，1、软轴，2、吊管，3、水泵体，4、叶轮，5、支撑架，6、出水口，7、输水软管，8、弯头。

安装时软轴1和吊管2将水泵体3吊挂潜入水中，支撑架5靠井壁把水泵体3定位，使水泵体工作时振动减少，水泵体3的出水口6远离叶轮4，输水软管7上方井口处的弯头8的作用，减弱因输水的冲击引起的叶轮4的振动，吊管采用一根加长的振动泵软轴套管，由于这四点改进，使软轴1在吊管2内旋转产生的剧烈游振减少，工作安全可靠，使用寿命长。

# 说明书附图

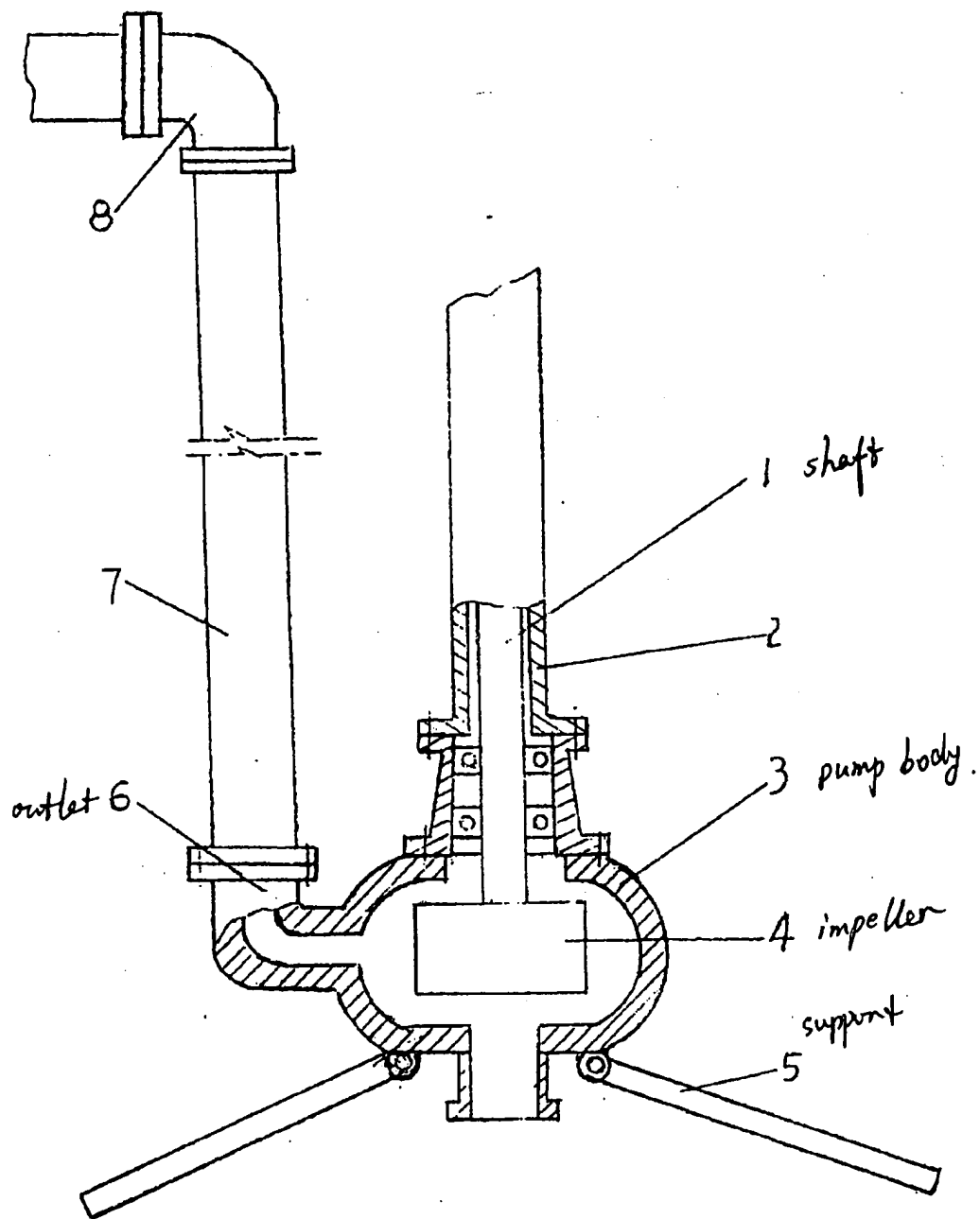


图 1

## Soft-shaft Deep Well Pump

Publication number: CN2248254Y

Publication date: 1997-02-26

Inventor: CHANGWANG FENG (CN); LIANYING FENG (CN);  
LIANWEN FENG (CN)

Applicant: FENG CHANGWANG (CN)

Classification:

- International: F04B47/02; F04B47/00; (IPC1-7): F04B47/02

- European:

Application number: CN19952020001U 19950809

Priority number(s): CN19952020001U 19950809

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Abstract not available for CN2248254Y

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Postcode: 200233 <u>LIU Jia</u> Shanghai Patent & Trademark Law Office, LLC No. 435 Gui Ping Road Shanghai City 200233 China	Date of Issue:  Patent Office (Sealed) 6 June 2008
Application No.: 2005100966408	
Applicant: CDX Gas, LLC	
Name of Invention: Method and system for accessing subterranean deposits from the surface	

### Advice on 1st Assessment Comments

1. ☒ In response to the application for actual assessment submitted by the Applicant, the National Administration of Intellectual Property Rights has performed actual assessment on the above invention patent application in accordance with the provision of Clause 1 of Article 35 of the Patents Act.  
☐ In accordance with the provision of Clause 2 of Article 35 of the Patents Act, the National Administration of Intellectual Property Rights has determined to conduct assessment on the above invention patent application on its own.
2. ☒ The Applicant has requested that the following date of application be taken as the "Patent Priority Date":

United States	Patent Office -	Date of Application:	20 Nov 1998
	Patent Office -	Date of Application:	
	Patent Office -	Date of Application:	

☐ The Applicant has submitted copy of primitively submitted priority application document that has been certified by the processing authority of the country to which the original application was submitted.  
☐ The Applicant has not submitted copy of primitively submitted priority application document that has been certified by the processing authority of the country to which the original application was submitted, and in accordance with the provision of Article 30 of the Patents Act, the Applicant is deemed to have not claimed for priority.
3. ☐ The Applicant submitted amendment documents on \_\_\_\_\_ and \_\_\_\_\_  
The \_\_\_\_\_ submitted by the Applicant on \_\_\_\_\_ is found not to be in conformity with the provision of Clause 1 of Article 51 of the Detailed Rules for Implementation of Patents Act.
4. ☒ The assessment has been conducted on the application documents as follows:  
☐ Primal application document ☒ The assessment has been conducted on the following application documents:  
Claim(s) \_\_\_\_\_, Prospectus page(s) \_\_\_\_\_, and Accessorial Drawing page(s) \_\_\_\_\_ of the primal application document submitted on the date of application.  
Claim(s) 1 - 17, Prospectus page(s) 1 - 12, Accessorial Drawing page(s) 1 - 8 of the primal application document submitted on the date of submission of partial application.  
Claim(s) \_\_\_\_\_, Prospectus page(s) \_\_\_\_\_, and Accessorial Drawing page(s) \_\_\_\_\_ submitted on \_\_\_\_\_.  
Claim(s) \_\_\_\_\_, Prospectus page(s) \_\_\_\_\_, and Accessorial Drawing page(s) \_\_\_\_\_ submitted on \_\_\_\_\_.  
Claim(s) \_\_\_\_\_, Prospectus page(s) \_\_\_\_\_, and Accessorial Drawing page(s) \_\_\_\_\_ submitted on \_\_\_\_\_.  
Prospectus submitted on 22 August 2005 and accessorial drawings submitted on 22 August 2005.
5. ☐ This Advice is given without conducting any search.  
☒ This Advice is given without after conducting search.  
☒ This Advice refers to the following comparison document (the reference number of which will continue to be used in future assessment process):

Reference Number	Document Number or Name	Date of Announcement (or Date of Interfering Application)
1.	CN2248254Y	26 February 1997
6. Assessment Conclusion  
☒ About Prospectus:  
☐ Contents of the application fall within the scope of non-patentability stipulated under Article 5 of the Patents Act:  
☐ The prospectus is not in conformity with the provision of Clause 3 of Article 26 of the Patents Act.  
☐ The prospectus is not in conformity with the provision of Article 33 of the Patents Act.  
☒ Writing of the prospectus is not in conformity with the provision of Article 18 of the Detailed Rules for Implementation of Patents Act.

(Sealed)

People's Republic of China  
National Administration of Intellectual Property Rights  
Seal for Patent Assessments 50

21301  
2008.7

Address for Correspondence:

Acceptance Department, National Administration of Intellectual Property Rights  
No. 6, Xi Tu Cheng Road, Ji Men Qiao, Hai Dian District, Beijing City 100088

Note: Correspondence addressed to any Assessors in their personal capacities shall have NO legal effect.

- ☐
- ☒ About Claims:
- ☒ Claim Nos. 1 - 2 do not possess novelty as stipulated under Clause 2 of Article 22 of the Patents Act.
- ☐ Claim Nos. do not possess creativeness as stipulated under Clause 3 of Article 22 of the Patents Act.
- ☐ Claim Nos. do not possess practicality as stipulated under Clause 4 of Article 22 of the Patents Act.
- ☐ Claim Nos. fall within the scope of non-patentability stipulated under Article 25 of the Patents Act.
- ☐ Claim Nos. are not in conformity with the provision of Clause 4 of Article 25 of the Patents Act.
- ☐ Claim Nos. are not in conformity with the provision of Clause 1 of Article 31 of the Patents Act.
- ☐ Claim Nos. are not in conformity with the provision of Article 33 of the Patents Act.
- ☐ Claim Nos. are not in conformity with the provision of Clause 1 of Article 2 of the Detailed Rules for Implementation of Patents Act.
- ☐ Claim Nos. are not in conformity with the provision of Clause 1 of Article 13 of the Detailed Rules for Implementation of Patents Act.
- ☐ Claim Nos. are not in conformity with the provision of Article 20 of the Detailed Rules for Implementation of Patents Act.
- ☐ Claim Nos. are not in conformity with the provision of Article 21 of the Detailed Rules for Implementation of Patents Act.
- ☐ Claim Nos. are not in conformity with the provision of Article 22 of the Detailed Rules for Implementation of Patents Act.
- ☐ Claim Nos. are not in conformity with the provision of Article 23 of the Detailed Rules for Implementation of Patents Act.
- ☒ Sub-case application is not in conformity with the provision of Clause 1 of Article 43 of the Detailed Rules for Implementation of Patents Act.
- For idiographic analysis of the above conclusion, please refer to the text part of this Advice.
7. Based on the above conclusion, the assessor is in the view that:
- ☐ The Applicant should revise the application documents according to the requests listed in the text part of this Advice.
- ☒ The Applicant should discuss in the statement of opinion the reasons for which his/her/its patent application should be granted patent rights, and should revise the parts of the application documents that are not in conformity with relevant laws as pointed out in the text part of this Advice, failing which no patent rights will be granted.
- ☐ The patent application has no substantial contents that are patentable, and if the Applicant does not make representation or if representation made is not adequate, the application will be rejected.
- ☐
8. The Applicant should take note of the following:
- (1) In accordance with the provision of Article 37 of the Patents Act, the Applicant shall make representation within Four (4) months from the date of receipt of this Advice, and if the Applicant fails to reply within the stipulated period without due reasons, the application will be deemed to have been withdrawn.
- (2) Any revision by the Applicant to a patent application shall be in conformity with the provision of Article 33 of the Patents Act, and revised application shall be made in duplicate and the format of which shall be in conformity with the relevant stipulation of the Assessment Guide.
- (3) Statement of opinion and/or revised application shall be mailed or handed to the Acceptance Department of the National Administration of Intellectual Property Rights, and any documents that are not mailed or handed to the Acceptance Department shall have NO legal effect.
- (4) No applicants/agents shall, without prior appointment, call at the National Administration of Intellectual Property Rights to meet any of its assessors.
9. The text part of this Advice contains Two (2) pages and is accompanied with the following enclosure(s).
- ☒ Photocopy of the referenced comparison document - 1 set with 3 pages. ☐

Assessor:  
LIU Qiong (2128) (sealed)  
 20 May 2008

Assessing Department:  
 Department for Mechanical Invention Assessments

21301  
 2006.7

Address for Correspondence:

Acceptance Department, National Administration of Intellectual Property Rights  
 No. 6, Xi Tu Cheng Road, Ji Men Qiao, Hai Dian District, Beijing City 100088

Note: Correspondence addressed to any Assessors in their personal capacities shall have NO legal effect.



## Advice on 1st Assessment Comments - Text

Application Number: 2005100966408

This application relates to a method and system for accessing subterranean deposits from the surface. After assessment, the following assessment opinions are presented.

### I

This application is a continuation-in-part of Chinese Application No. 99815570.5, the contents of which exceed the scope of recording of the original application and are therefore not in conformity with the provision of Clause 1 of Article 43 of the Detailed Rules for Implementation of Patents Act. In this continuation application, the Applicant has added the following contents: "9. A method for automatically positioning and retracting down-hole equipment in a cavity, comprising: providing a cavity positioning device coupled to the well bore portion of a down-hole equipment; disposing the down-hole equipment and the cavity positioning device to a well bore, with the cavity positioning device set in a retracted position relative to the well bore portion; causing the down-hole equipment and the cavity positioning device to travel downward to the cavity, the cavity positioning device automatically displaces to an extended position in the cavity relative to the well bore; and causing the down-hole equipment to be positioned at a predetermined position by causing a portion of the cavity to be in contact with the cavity positioning device"; "16. An underground cavity positioning system, comprising: a down-hole equipment having a well bore portion; and a cavity positioning device that may be rotatably coupled to the well bore portion of the down-hole equipment, with the cavity positioning device having a counter balance portion operable to displace to the underground cavity along with the cavity positioning device to cause the cavity positioning device to automatically displace from a retracted position to an extended position". Also, the dependent Claims 10 - 15 of the independent Claim 9 and the dependent Claim 17 of independent Claim 16 (see Claims 9 - 17): in these parts of the claims, the contents "A method for automatically positioning and retracting down-hole equipment in a cavity" and "An underground cavity positioning system" not only are not recorded in the original application document, but are either not directly nor undoubtedly determinable from the information recorded in the original application document. Therefore, this partial application has gone beyond the scope recorded in the original application. The Applicant is required to revise the application document of this partial application making sure that its contents are within the scope recorded in the original application, failing which the assessor will have the partial application rejected in accordance with the provision of Clause 4 of Article 53 of the Detailed Rules for Implementation of Patents Act.

### II

1. The technical scheme for which protection is claimed by Claim 1 does not possess novelty as stipulated under Clause 2 of Article 22 of the Patents Act. The comparison document 1 (CN2248254Y) discloses a soft-shaft deep well water pump, and in particular, a soft-shaft deep well water pump having the following characteristics: "A soft-shaft deep well water pump, wherein the pump body has an inlet portion (i.e. well bore portion) at its bottom that may extract fluid from the well, and the pump body has a retractable support bracket under it for its mounting onto the well wall (cavity positioning device); and the retractable support bracket is extended from a first position in the well to a second position to have the inlet portion positioned at a predetermined position in the well" (refer to Claim 1 and pages 1 - 2 and Figure 1 of the Prospectus for details). ...

*(To be continued)*

(Continued)

... Comparing the contents disclosed in the comparison document 1 and the technical scheme for which protection is claimed by Claim 1, there is only a slight difference in literal expression. Both schemes fall within the same technical field, solve the same technical problems and produce the same technical result of positioning water pump in well. Therefore, the technical scheme for which protection is claimed thereby does not possess novelty.

2. Dependent Claim 2 further defines Claim 1. The additional technical characteristic "the cavity positioning device is rotatably coupled to the well bore portion, wherein the cavity positioning device is operable to rotate from a first position to a second position" as defined by the dependent Claim 2 has been disclosed by the comparison document 1 (refer to Claim 1 and Figure 1 of the comparison document). Therefore, on the basis that Claim 1 does not possess novelty, the technical scheme for which protection is claimed by its dependent claim also does not possess novelty as stipulated under Clause 2 of Article 22 of the Patents Act.
3. The name of invention of this application is inappropriate and is not in conformity with the provision of Article 1 of the Detailed Rules for Implementation of Patents Act (refer to Section 2.2.1 of Chapter 2 - Part 2 of the Assessment Guide). The Applicant is required to determine the name of invention based on the contents of the invented technique for which protection is claimed by this application.
4. The "Technical Field" part of the prospectus of the application has not expressly indicated the technical field within which the technical scheme for which protection is claimed falls or the technical field whose techniques are directly used by the technical scheme for which protection is claimed, and the "Technical Field" part of the prospectus of the application has stated "the present invention relates generally to the recovery of subterranean deposits, and more particularly to a method and system for accessing subterranean deposits from the surface". The Applicant is required to have it revised so as to be in conformity with the provision of Clause 1 of Article 18 of the Detailed Rules for Implementation of Patents Act.

The Applicant is required to reply within the time period specified by this advice addressing one by one all queries raised in this advice and to revise the patent application documents based on the comments of this advice. In particular, the Applicant is required to revise independent claims and the relevant dependent claims based on the comparison document cited by this advice, and to discuss in its statement of opinions the reasons of the newly revised independent claims possessing novelty and creativeness relative to the techniques existing prior to the application dates mentioned in the comparison document cited by this advice and relative to the techniques existing prior to the application dates mentioned in the original prospectus. In addition, the prospectus must be adjustably revised based on the revised claims. Revision of the application documents by the Applicant must be in conformity with the provision of Article 33 of the Patents Act and must not go beyond the scope of recording of the original prospectus and claims.

Revised documents to be submitted by the Applicant must include: photocopy of the original text of the part involved in revision (with all the additions, deletions and replacements labeled using red fountain pen or red ball-point pen); newly printed replacement pages (in duplicate) for replacing the corresponding original text. The Applicant must ensure that the two are consistent in content.

Assessor: LIU Qiong (sealed)  
Code: 2128



[12]

**Utility Model Patent Prospectus**[21] ZL Patent Number: **95220001.5**

[45] Date of Authorized Announcement: 26 February 1997

[11] Authorized Announcement Number: **CN 2248254 Y**

[22] Date Application Filed: 9 August 1995  
 [24] Date Certificate Issued: 18 January 1997  
 [73] Name of Patentee: **FENG Chang-wang**  
 Address of Applicant: Office for Village and Township Enterprises  
 Chen Gu Xiang  
 Fengqiu County 453341  
 Henan Province

[72] Designer(s): **FENG Chang-wang**  
**FENG Lian-ying**  
**FENG Lian-wen**

[21] Application Number: 95220001.5  
 [74] Patent Representative: Xin Xiang City  
 Organization: Patent Services Center

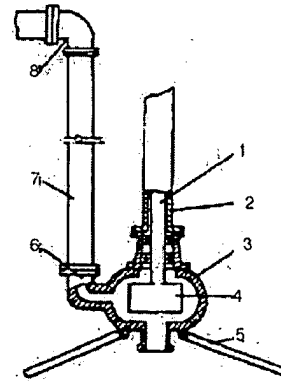
Name of Representative: **SHEN Ming**

Claims - 1 page, Prospectus - 2 pages,  
 Drawing - 1 page

[54] Name of **Soft-shaft Deep Well Water Pump**  
 Utility Model:

[57] **Abstract:**

A soft-shaft deep well water pump comprising a hanged pipe, a soft shaft, a pump body and a soft pipe for water delivery, characterized in that the pump body has a retractable support bracket under it for its mounting onto the well wall; the water outlet of the pump body is apart from the impeller and connected to the soft pipe at a position located beyond the maximum diameter of the impeller; the soft pipe has an elbow capable of reducing water shock at its bent at the well head and the body of the elbow is fixed at a position of the well head; and the hanged pipe is an extended wearable sleeve pipe for soft shaft. The pump of this configuration enables reduction of swimming vibration caused by rotation of the soft shaft in the hanged pipe and has a longer lifespan. It is convenient to install and pull out, and its operation is safe and reliable.



## Claim

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1. A soft-shaft deep well water pump comprising a hanged pipe, a soft shaft, a pump body and a soft pipe for water delivery, characterized in that the pump body has a retractable support bracket under it for its mounting onto the well wall; the water outlet of the pump body is apart from the impeller and connected to the soft pipe at a position located beyond the maximum diameter of the impeller; the soft pipe has an elbow capable of reducing water shock at its bent at the well head and the body of the elbow is fixed at a position of the well head; and the hanged pipe is an extended wearable sleeve pipe for soft shaft. The pump of this configuration enables reduction of swimming vibration caused by rotation of the soft shaft in the hanged pipe and has a longer lifespan. It is convenient to install and pull out, and its operation is safe and reliable.

# Prospectus

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## Soft-shaft Deep Well Water Pump

This utility model relates to an improved soft-shaft deep well water pump.

Chinese Patent No. 92202978.4, entitled "Soft-shaft Submersible Centrifugal Agricultural Clear Water Pump", discloses a water pump, the characteristics of which are that: the hanged pipe of the water pump has a soft shaft in it; the bottom of the soft shaft is connected to the transmission shaft of a pump impeller while the top of the soft shaft is connected to power; the water pump is directly submerged into water; and a water outlet facing towards the well head is connected the well head using a soft pipe for water delivery. Although the pump resolves agricultural irrigation problems associated with areas having low water levels and no electricity, as the pump is directly submerged into water suspendedly, the soft shaft generates acute swimming vibration in the hanged pipe by rotation. As part of the water outlet is above the impeller, water shock in the water outlet pipe has significant impact on the impeller, and dithering of the impeller causes the soft shaft to rotate in the hanged pipe and generate more tempestuous swimming vibration. This would cause the hanged pipe to wear off and the pump to drop into the water, resulting in substantial economic losses.

The objective of this utility model is to provide a soft-shaft deep well water pump that reduces soft shaft rotation in the hanged pipe to prevent generation of tempestuous swimming vibration, and that has a long lifespan.

The objective of this utility model is accomplished in a manner such that the soft-shaft deep well water pump comprises a hanged pipe, a soft shaft, a pump body and a soft pipe for water delivery, and the soft-shaft deep well water pump is characterized in that the pump body has a retractable support bracket under it for its mounting onto the well wall; the water outlet of the pump body is apart from the impeller and connected to the soft pipe at a position located beyond the maximum diameter of the impeller; the soft pipe has an elbow capable of reducing water shock at its bent at the well head and the body of the elbow is fixed at a position of the well head; and the hanged pipe is an extended wearable sleeve pipe for soft shaft.

This utility model does not rely only on suspending the pump body for positioning but it has a support bracket to reduce vibration of the pump body. In addition, the water outlet of the pump body is apart from the impeller, and due to the effect of the elbow at the top of the soft pipe for water delivery near the well head, negative effects of undesired water shock caused to the impeller during water delivery is reduced, ...

*(To be continued)*

*(Continued)*

... i.e. impeller vibration aroused by water shock is reduced, thereby reducing swimming vibration of the soft shaft in the hanged pipe to prolong the pump lifespan. Further, the pump is convenient to install and pull out, and its operation is safe and reliable. The hanged pipe is a specially made extended wearable sleeve pipe for soft shaft. It has a good wearability and a small friction, and can therefore effectively protect the soft shaft and save energy. The hanged pipe has no interface at the center so as to prevent water from penetrating the pipe and washing out lubricating oil from the pipe. It reduces wearing-off of bearings in the pump body to make pump operation safe and reliable.

The idiographic configuration of this utility model is illustrated by the following embodiment and its drawings.

Figure 1 is a longitudinal sectional view of the soft-shaft deep well water pump according to this utility model.

As shown in Figure 1, the soft-shaft deep well water pump comprises a soft shaft 1, a hanged pipe 2, a pump body 3, an impeller 4, a support bracket 5, a water outlet 6, a soft pipe 7 (for water delivery), and an elbow 8.

During installation, the soft shaft 1 and the hanged pipe 2 suspendedly submerge the pump body 3 into water, the support bracket 5 leans against the well wall to position the pump body 3 in order to reduce vibration of the pump body during its operation. The water outlet 6 of the pump body 3 is apart from the impeller 4. The effect of the elbow 8 at the top of the soft pipe 7 (for water delivery) near the well head reduces vibration of the impeller 4 caused by water shock due to water delivery. The hanged pipe is an extended vibration pump sleeve pipe for soft shaft. Owing to these four improvements, tempestuous swimming vibration generated by rotation of the soft shaft 1 in the hanged pipe 2 is reduced, operation of the pump is safe and reliable, and the pump has a longer lifespan.

# Drawing

## Soft-shaft Deep Well Water Pump

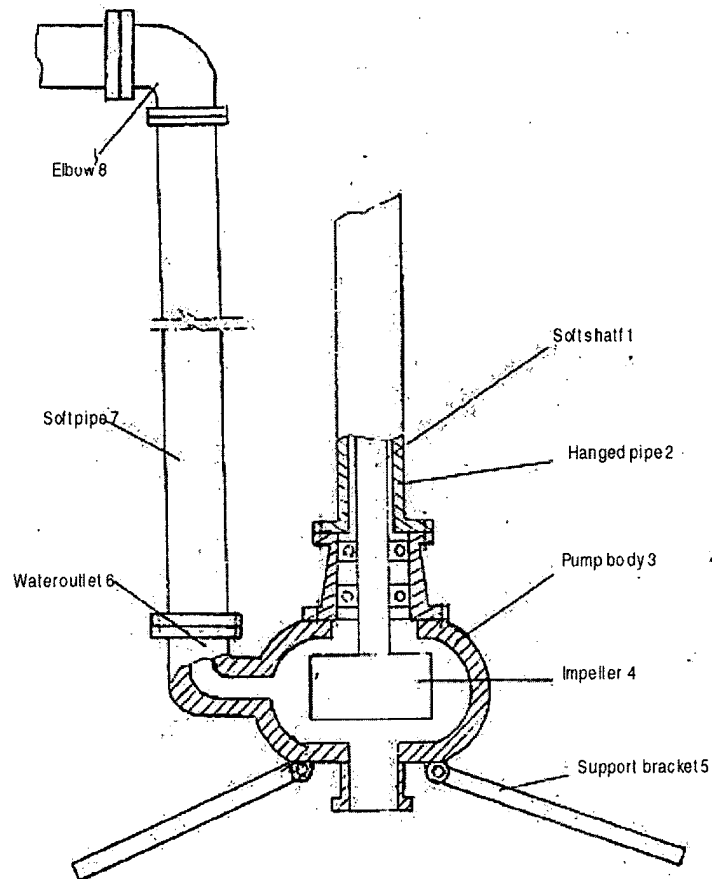


Figure 1